

VARIABLE RATE SPEECH CODING

ABSTRACT

A method and apparatus for the variable rate coding of a speech signal. An input speech signal is classified and an appropriate coding mode is selected based on this classification. For each classification, the coding mode that achieves the lowest bit rate with an acceptable quality of speech reproduction is selected. Low average bit rates are achieved by only employing high fidelity modes (*i.e.*, high bit rate, broadly applicable to different types of speech) during portions of the speech where this fidelity is required for acceptable output. Lower bit rate modes are used during portions of speech where these modes produce acceptable output. Input speech signal is classified into active and inactive regions. Active regions are further classified into voiced, unvoiced, and transient regions. Various coding modes are applied to active speech, depending upon the required level of fidelity. Coding modes may be utilized according to the strengths and weaknesses of each particular mode. The apparatus dynamically switches between these modes as the properties of the speech signal vary with time. And where appropriate, regions of speech are modeled as pseudo-random noise, resulting in a significantly lower bit rate. This coding is used in a dynamic fashion whenever unvoiced speech or background noise is detected.